What is claimed is:

1. A structure of a multi-input multi-output multicarrier code division multiple access (MIMO MC-CDMA) communication system comprising at least one transmitter and at least one receiver, the transmitter comprising:

a de-multiplexer for receiving a user's data and outputting the data divided into a plurality of parallel data streams;

a plurality of space time block encoders individually receiving the parallel data streams of the de-multiplexer and outputting the data streams after encoding;

a plurality of space-path spreaders receiving outputted data from the space time block encoders and outputting received data after spreading with a pre-designed space-path spreading code; and

a plurality of transmit antennas, each transmit antenna receives outputted data from each space-path spreader and transmitting received data through multiple paths.

2. The structure of the communication system of claim 1, wherein the de-multiplexer receives sets of the user's data, each user's data is proceeded with the de-multiplexer, the space time block encoders and the space-path spreaders, and sets of the proceeded user's data are collected at the transmit antennas and transmitted with the transmit antennas.

3. The structure of the communication system of claim 2, wherein the structure comprises a plurality of groups composed of the de-multiplexer, the space time block encoders and the space-path spreaders, each group is used for individually proceeding one of sets of the user's data, and sets of the proceeded user's data are collected at the transmit antennas and transmitted with the transmit antennas.

4. The structure of the communication system of claim 3, wherein each user's data is spread with the different and orthogonal space-path spreading codes.

5. The structure of the communication system of claim 1, wherein the data transferred to the transmit antennas is firstly transformed to a time domain data with

inverse fast Fourier transform (IFFT) and added a guard time.

6. The structure of the communication system of claim 1, wherein the communication system is a wireless transceiver system.

7. The structure of the communication system of claim 6, wherein the transmitter is one of a base station.

8. The structure of the communication system of claim 1, wherein the receiver comprises:

a plurality of receive antennas for receiving data transmitted by the transmit antennas;

a plurality of matched filters individually receiving data received by the receive antennas and despreading it in accordance with the space-path spreading code;

a space-time linear combiner receiving data despread by the matched filters and outputting received data after combining;

a BLAST detector receiving data outputted by the space-time linear combiner, separating mutually interfering signal from the multiple transmit antennas,

obtaining diversity gain, and outputting operated data; and

a multiplexer receiving data outputted by the BLAST detector and outputting data after multiplexing.

9. The structure of the communication system of claim 8, wherein data received by the receive antennas is transferred to the matched filters after taking fast Fourier transform (FFT) and removing guard time of data.

10. The structure of the communication system of claim 1, wherein the receiver is a mobile station of a wireless communication system.

11. The structure of the communication system of claim 8, wherein the receiver can only receive data matched the space-path spreading code of the receiver.

12. The structure of the communication system of claim 1, wherein the space time block encoder is connected to the space-path spreader by group.

13. The structure of the communication system of claim

1, wherein each space time block encoder is connected to more than one space-path spreaders.

14. A multi-input multi-output multicarrier code division multiple access (MIMO MC-CDMA) communication method comprising a step of transmitting data and a step of receiving data, the step of transmitting data comprising:

simultaneously transferring a transmitting data to a plurality of parallel data streams;

space time block encoding each parallel data stream;

spreading the encoded data streams with a pre-designed space-path spreading code; and

collecting the spread parallel data streams, transferring to a plurality of transmit antennas, and transmitting data with the transmit antennas through a multiple paths.

15. The communication method of claim 14, wherein the transmitting data comes from a plurality of users.

16. The communication method of claim 14, wherein the transmitting data is sorted by different users and

transferred to the parallel data streams of different group, and data of all parallel data streams is collected to transmit out with the transmit antennas through the multiple paths after space time block encoding and spreading with the pre-designed space-path spreading code.

17. The communication method of claim 14, steps of receiving data comprising:

receiving data transmitted by the transmit antennas through a plurality of receive antennas;

despreading data received by the receive antennas through a plurality of corresponding matched filters in accordance with the pre-designed space-path spreading code;

combining the despread data with a linear combiner; and

separating mutually interfering signal from the combined data with a BLAST detector, and outputting data after multiplexing it with a multiplexer.